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Application notification for  
supplementary search for the programme

# CATCH THE CARBON

## – Research and Innovation Programme 2021–2024



 **Catch  
the  
carbon**  
CLIMATE SOLUTIONS IN  
THE LAND USE SECTOR

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### Application notification for supplementary search for the programme

The Catch the Carbon Research and Innovation Programme (R&I programme) is part of the Ministry of Agriculture and Forestry's extensive set of climate measures in the land use sector, the aim of which is to reduce greenhouse gas emissions from agriculture and forestry and other land use and to maintain and strengthen carbon sinks and stocks. The target net impact of the set of measures will be at least 3 Mt CO<sub>2</sub>-eq per year in 2035.

The application process will result in funding for projects that complement the climate measures already launched in the land use sector.

- [The launched Catch the Carbon research and innovation programme projects](#)

The first round of applications for the R&I programme was implemented at the end of 2020, and in February 2021, a total of EUR 10.7 million of funding was granted to ten research and innovation projects.

**The programme's supplementary application process will be open between 6 October and 5 November 2021**, and it will provide approximately EUR 5 million in funding.

The objectives and programme memorandum of the supplementary application process are essentially the same as in the first application process. In addition, applications examining the use of technological solutions in the land use sector and applications related to carbon compensations and nudging are particularly desirable in the supplementary application process. Applicants are also generally encouraged to promote new, research-based innovations in the land use sector. The programme memorandum has been updated particularly with regard to these additions.

Applicants should note that at the same time, there is an open call for practical Catch the Carbon development projects. Development projects refer to the use of information obtained as a result of research and/or through practical experience for evaluations, data processing, the use of information systems, information steering, training, monitoring, processes or methods, insofar as they are not clearly research-based work that creates new information.

## BACKGROUND

Achieving the carbon-neutral Finland 2035 target requires significant and rapid emission reductions in energy production and transport, while simultaneously reducing emissions from the land use sector and strengthening carbon sinks and stocks. According to Prime Minister Sanna Marin's Government Programme, land use will be increasingly integrated into the planning and implementation of the national climate and energy policy during this Government term. Land use is defined according to the national greenhouse gas inventory system, in which land use categories according to land use, land use change and the forestry sector are as follows: forest land, arable land, grassland areas, wetlands, developed land and other land.

Climate action in the land use sector is implemented in a cross-administrative manner and in cooperation with organisations and private sector operators. Climate action also supports the achievement of the goals of a number of national, European and international strategies, programmes and projects (e.g. the EU climate framework 2030 and the Green Deal as well as the research and innovation programme promoting it, the EU Bioeconomy Strategy and the Recovery and Resilience Facility (RRF)). The cost-effective and efficient implementation of the measures requires a strong research basis and foresight, which is why the production and efficient use of research data play a key role in achieving the objectives.

The R&I programme memorandum has been drawn up to extensively involve stakeholders. In addition, various national and international land use strategies and research programmes have guided the setting of programme objectives. For instance, the National Climate Change Adaptation Plan and the National Forest Strategy have been used for planning. In addition, sector-specific roadmaps for low-carbon emissions and the objectives of the national roadmap for research, development and innovation have been applied. It is expected that the research projects participating in the R&I programme will use the processes and results of national and international strategies, programmes, projects and networks (for example, the EU Commission's Fit for 55 Climate Package and Mission Area Soil Health and Food, the Strategic Research Council programmes of the Academy of Finland, several reports on climate change and carbon neutrality by the Prime Minister's Office and the climate food programme prepared by the Ministry of Agriculture and Forestry).

## OBJECTIVES

The objective of the Catch the Carbon R&I programme is to produce new research data and proposals for solutions that anticipate changes in the operating environment for:

1. reducing carbon and other greenhouse gas emissions from land use,
2. reinforcing carbon sinks and carbon stocks, and
3. strengthening the sustainable use and overall sustainability of renewable natural resources.

In order to improve the effectiveness of climate change mitigation and adaptation measures, targeted research data is needed, combined with experiments, pilot projects or other innovative activities. Solutions for targeting climate-sustainable land use are sought in both the short and long term.

The objective of the R&I programme is that the projects selected for it reinforce each other and jointly generate new, multidisciplinary research data to support climate measures in the land use sector. The programme requires extensive and creative interdisciplinary and cross-sectoral cooperation. Active participation in the activities of the programme is required of projects to be financed.

The objective of the R&I programme is also to strengthen, develop and reform national research expertise in promoting climate objectives and other sustainable development objectives in the land use sector and to create preconditions for innovative activities.

The results of the R&I programme are public and the data is open access. Active participation, interaction and communication are required of projects. The project proposals must clearly and understandably present an impact chain through which the results of the research and innovation project would be become concrete changes in practices or structures, and through them, an impact towards achieving the 2035 carbon neutrality target.

Projects funded under the programme are expected to make stronger use of their ongoing international and national research and to produce proposals for solutions to be applied to different decision-making processes.

## THEMES

The R&I programme contains four themes that will be ongoing throughout the programme period. The themes are cross-cutting: from a major systemic change (a change in the air) towards targeted regional and local changes and solutions (nudging in land use) and further to producing innovative solutions from soil processes (wisdom in soil). In addition, cross-cutting anticipation and new types of research on policy and steering methods are needed.

The project consortium is requested to focus on one theme, but the project may meet the objectives of several themes. Similarly, an individual project does not need to meet the objectives of all themes.

Examples of research and innovation topics related to the themes are the result of stakeholder cooperation, and the applicants can use them at their discretion to brainstorm the entire research topic or work packages.

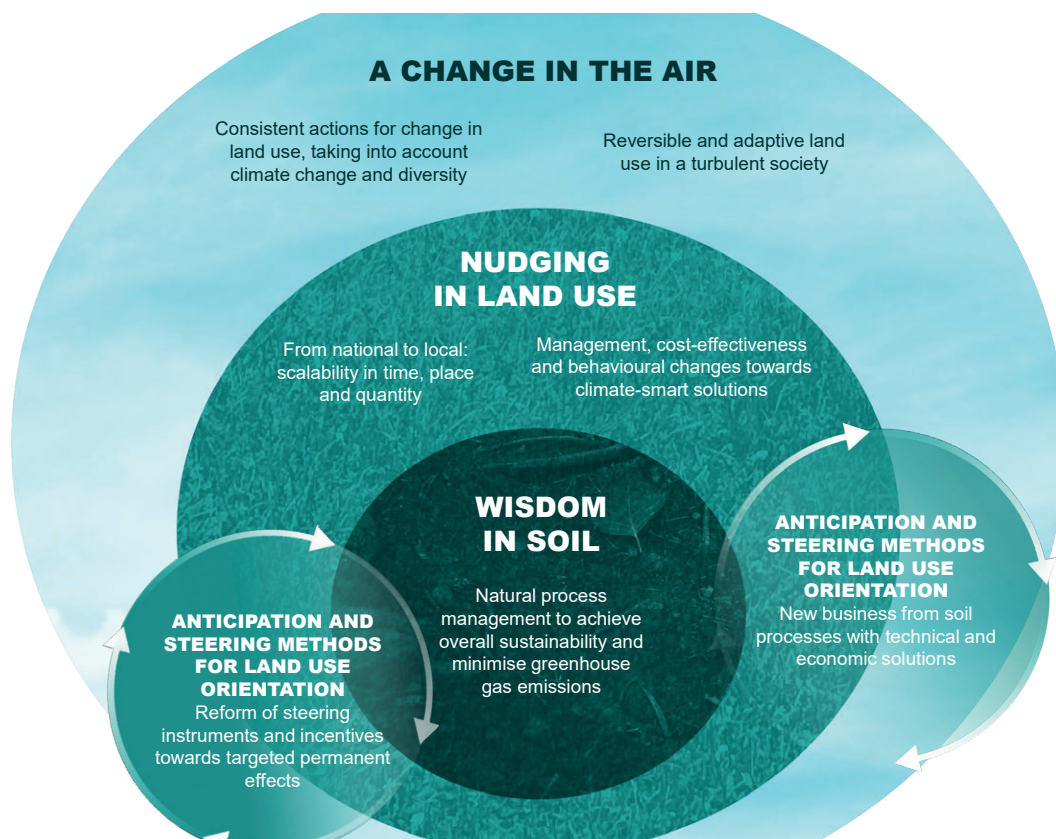


Figure 1. The themes support each other and produce solutions applicable to different operating environments.

# THEME 1 “A change in the air”

**Objective:** *Consistent land use changes taking into account climate change and diversity*

**Objective:** *Reversible and adaptive land use in a turbulent society*

The “change in the air” theme satisfies the need for research data, in which applicable long-term system-level change solutions are sought. The solutions must be consistent and rise to the challenge of climate change, the reinforcement of diversity (e.g. biodiversity and geodiversity, economic diversity, well-being and its regional aspects) and the need for fair measures. The projects must be able to demonstrate how the measures have been estimated in advance to be globally sustainable in terms of ecological, economic, social and cultural sustainability and acceptability.

Wicked problems and social turbulence are increasing, and the pressure to achieve long-term impact through land use solutions is also increasing. How can we achieve proactive sensitivity for reconciling the objectives and measures of different levels and sectors so that the carbon neutrality target set for 2035 can be achieved? How are land use sector measures linked to a systemic perspective, taking into account their ecological, economic, social and cultural sustainability perspectives and, for example, adaptability and the ability to recover as well as the security of supply? What are climate-sustainable land use measures and solutions from the perspective of mitigation, adaptation, fairness and vulnerability?

Climate-resilient land use solutions are not limited to a single government level or sector nor to national actions. The solutions can be implemented on a sector-specific and local basis, but research is used to seek comprehensive information on potential changes, change paths and their impacts as well as necessary measures.

A comprehensive, system-level review would help bring the link between the changes in agriculture, forestry and land use into sharp focus. Similarly, system-level research is needed on the possibilities of carbon-neutral bioeconomy and circular economy, such as the consolidation of forestry and, for example, the industrial use and energy use of wood biomass.

Further researched information is also needed on the diversity impacts of climate change mitigation, linked to the objectives of adaptation and fairness, and on the consolidation of measures to be implemented, cross-effects, reflection impacts and potential policy inconsistencies.

## WHAT KIND OF PROPOSALS FOR SOLUTIONS ARE MADE BASED ON RESEARCH AND INNOVATIONS?

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*The aim of the study is to provide information on the kind of changes that are taking place at the systemic level, along with their emission impacts, when land use changes as a result of climate action and adaptation to climate change.*

**For example, the following research and innovation topics and related potential solutions have emerged in stakeholder work:**

- Solution-oriented alternative paths for adaptation to climate change in the land use sector
- Towards climate-sustainable forestry or forest reproduction (including regeneration, processing, biodiversity analysis and protection, impacts on water bodies, profitability)
- Satisfying climate policy needs other than through the CAP (common agriculture policy)? For example, the allocation of additional measures or funding and new proposals for solutions to ensure emission reductions outside the CAP
- Changes in livestock farming and new uses of the field area released from livestock farming in support of emission reduction targets and/or carbon sinks and stock targets
- The role of organic production and its efficiency in mitigating and adapting to climate change
- Impacts of climate action, including forest fertilisation, on biodiversity and strain on water bodies and on features such as the production structure and the cost-effectiveness of production
- Adapting water protection measures to changing climate, water management solutions promoting climate objectives, water catchment area level reviews and actions
- Multi-benefit assessment: climate (also including greenhouse gases other than CO<sub>2</sub>), biodiversity promotion, nutrient and material recycling and improving the state of water bodies
- Cultivation methods in different circumstances, their greenhouse gas balance and costs
- Climate-resilient new cultivation systems (e.g. mixed farming, agroforestry, paludiculture)
- Prerequisites for the production of future ecosystem services (e.g. need for new types of contract systems) to ensure the consolidation of carbon sequestration as well as water management and diversity
- Carbon compensations: verifiability of baseline, additionality, persistence and other criteria, reliable calculation methods, double calculation and carbon leakage challenges, direct and indirect impacts on other ecosystem services
- Systemic impacts of compensations (e.g. changes in climate and agricultural policy, in the earnings logic of producers and forest owners as well as in forest industry, socio-economic perspectives, motives for the use of compensations)
- Future land use planning system that supports carbon neutrality and takes water management into account
- Promoting the prerequisites for the use of long-lasting timber products and side streams, e.g. substitution benefits and impacts of cascading use on climate sustainability and biodiversity
- Effective solutions for reducing methane and ammonia emissions from domestic animals
- Disruptive technologies, radical new forms of food production, biotechnology and food technology enabling carbon neutrality objectives
- Technological solutions for promoting climate sustainability in the land use sector (e.g. digitalisation, sensor technology, imaging and remote mapping techniques, automation technology, use of data and artificial intelligence)
- Electrification, energy efficiency in the land use sector (e.g. electrification of machinery, changes in farm electricity consumption and their impacts)
- Lifecycle calculation in assessing substitution issues and developing the life cycle carbon footprint calculation of value chains by linking changes in soil carbon stock to LCA calculation
- Land use management and restraint to render it globally sustainable and consistent (governance, political consistency)

## THEME 2 “Nudging in land use”

**Objective:** *From national to local: Scalability in time, place and quantity*

**Objective:** *Management, behavioural changes and cost-effectiveness towards climate-smart solutions*

Structures, systems and incentives to reduce emissions from the land use sector and to increase carbon sinks and stocks are already identified, at least in part, but this may not yet be enough for change. The operators are different, and different methods are also needed to promote the desired changes. The aim of nudging is to expand the solutions and to seek new, insightful research on the sensitivity and rigidity of the change, the willingness and ability to change, and the nudging measures required for the change. The aim is also to assess the feasibility of the measures and possibly also to test their functionality together: the moments, places and keys to catching on in the application process.

Nudging often starts with identifying obstacles to change and conflicts. It is also possible to promote change and the freedom of choice through new technological and behavioural solutions as well as economic incentives. The aim is to make different operators carry out new types of measures and choices that cost-effectively promote the carbon neutrality target. Nudging can also be used to produce proposals for solutions for orienting climate-sustainable land use in the application of existing research data.

For innovative and applicable solution proposals, strong interdisciplinary and cross-administrative cooperation will be needed, for example in the field of behavioural sciences, law, economics and management research, integrated into research and expertise in the land use sector.

The nudging study is expected to provide proposals for solutions with proven scalability, timeliness, suitability for targeting, significance and quantification. At the same time, an innovative approach is sought to promote regional and local change. Solutions can be tested and piloted as part of the project.

The projects must produce information targeted at local, regional and national needs. How and under what conditions can operators in municipalities or other regions in different parts of Finland be nudgers for achieving carbon neutrality targets? What long-term impact can the measures achieve? For example, what are the regional and local impacts of the consolidation of different uses of forests on climate sustainability? What kind of changes are needed? What prevents, and what promotes change?

At the same time with the development of innovative nudging solutions, their impacts must be comprehensively assessed. The evaluation should focus on the significance (environment, economy, fairness, acceptability), timeliness (speed and verifiability of change as well as its traceability), scalability and applicability of different actions. In addition, possible obstacles to the feasibility of the measures must be assessed, and solutions must be found to overcome them. When searching for specific measures and cost-effectiveness for climate action in land use, it is also necessary to specify what effectiveness is primarily sought and on what basis.

Land use will not become climate-sustainable without climate-smart farmers, forest owners, forestry professionals, advisors, processors, consumers, etc. How can we promote the moments of insight and put measures into practice? What motivates and encourages different operators, what benefits do they see in their activities and what kind of compromises are they prepared to make for them? What are the obstacles and promotion factors in the implementation of climate-resilient measures? Have the measures been proven climate-resilient and cost-effective, for example, taking into account different soil types and also the impacts on water bodies and biodiversity, and if so, how are the impacts measured? What kind of management competence is needed for the change? Could, for example, partnership in agriculture increase consumer understanding or provide test sites?

## WHAT KIND OF SOLUTIONS CAN RESEARCH AND INNOVATION PROVIDE?

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*Further researched information is needed on actions to achieve the climate objectives of the land use sector and on the attitudes and other capacities of landowners and forest owners to implement the measures. The proposed solutions must be targeted and take into account local, regional and national specificities.*

### **For example, the following research and innovation topics and related potential solutions have emerged in stakeholder work:**

- Business and cooperation models, for instance for paludiculture and forest management
- Partner agriculture as a climate and biodiversity measure
- Strategic and operational competence derived from management competence for land use measures
- Applicability of agroforestry as a climate measure in Finland, including the impacts of piloting diversified field use from farms up to the system level
- Developing new forestry methods to promote overall sustainability
- Solutions to reduce greenhouse gas emissions in land consolidation
- Preconditions and expectations for the restoration of marshes and forests and the intensification of wood production as well as the repercussions on features such as water bodies and other ecosystem services produced by forests
- Regional and local impacts of the consolidation of different forms of land use on climate sustainability
- Change research on which greenhouse gas price level or other capacities and preconditions would involve Finnish land and forest owners in achieving carbon neutrality targets



## THEME 3 “Wisdom in soil”

**Objective:** *Natural process management to achieve overall sustainability and minimise greenhouse gas emissions*

**Objective:** *New business from soil processes with technical and economic solutions*

More research data is needed to orient climate-resilient land use measures in a situation where climate and, for instance, the amount of biodiversity are changing. The aim is to obtain applicable research data and technological and economic solutions (including incentives) from various natural soil processes to promote carbon sequestration, the preservation of stocks and greenhouse gas reduction. Another objective is the research development of methods that support climate sustainability and the verification of changes in greenhouse gas emissions in different farming and forestry options.

For example, in terms of crop rotation or carbon sequestration of peat and mineral soils, more information is needed on soil mechanisms and the feasibility of various measures. Assessing the suitability of the proposed measures requires a comprehensive and targeted assessment of soil, water and other environmental impacts, combined with an assessment of economic and policy measures and acceptability as part of the study. The aim is to obtain researched information on soil carbon, nutrient and water cycles and the factors affecting them and to find ways to minimise harmful impacts on climate, biodiversity, the economy and society.

In addition to the strategies and initiatives mentioned earlier, the theme also highlights the EU Commission’s Farm to Fork strategy and the international 4/1000 initiative to increase cost-effective carbon sequestration and stocking in agriculture.

With regard to forestry and other land use, more research is needed on carbon sequestration and stocking, such as the impacts of tree species selection on soil, on the impacts of fertilisation on soil, water and biodiversity, and the availability of sustainable recycled fertilisers in forestry. Research is also needed on specific measures targeted at organic or mineral soil and the assessment of their impacts. In addition, researched solution-oriented information would be needed on features such as the impacts of continuous-cover cultivation on forest regeneration, growth, soil, water protection and the carbon cycle. There is also a need for accurate information for assessing the properties of various sites (arable parcels of land, compartments) and their response to measures as well as their significance for emission reductions.

At best, experiments and innovative ideas produce solutions, which can create new business ideas with a sustainable basis to promote climate-smart land use.

## WHAT KIND OF SOLUTIONS CAN RESEARCH AND INNOVATION PROVIDE?

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*In order to achieve the climate objectives of the land use sector, more researched information is needed, for example, on soil processes and other new technological, economic and societal proposals for solutions.*

### **For example, the following research and innovation topics and related potential solutions have emerged in stakeholder work:**

- Increasing paludiculture and promoting the emergence of a market for paludiculture products
- The importance of organic matter in mineral soil as a means for carbon sequestration and stocking in different conditions
- Closed nutrient cycles in agriculture (overall review of plant and animal production) as climate measures
- New plant processing techniques for the production of new varieties suitable for varying conditions
- Carbon stock impacts of construction, for instance when building on woodland or arable land
- Carbon handprint: verifiability, reliability and suitability to promote the achievement of carbon neutrality targets and the verification of long-term effects?
- Soil microbial properties and soil modification
- Specific measures: nutrients according to growth and management of N<sub>2</sub>O emissions
- Transfer of carbon stock from one field to another and its effects as a climate measure
- Climate impacts of marshland restoration
- Climate-smart crop rotation
- Arable land properties and land carbon stock
- Land degradation neutrality
- Peat substitution growing media and other new cultivation solutions
- Regional surveys of drainage in water management and soil modelling of drained peatland as part of climate measures
- Impacts of forest land properties and impacts of its uses on the forest carbon stock
- Improving the cost-effectiveness of subsidies by taking into account land types when targeting soil management measures
- Steering instruments, incentives and markets to promote the strengthening of forest and soil carbon stocks and soil health

## **CROSS-CUTTING THEME 4**

### **“Anticipation and steering methods for land use orientation”**

**Objective:** *Managing risks and disruptions and targeting actions by means of anticipation*

**Objective:** *Reform of steering instruments and incentives towards targeted permanent effects*

Natural resource operators play an important role in striving for the carbon neutrality target. Anticipatory competence in terms of disturbances, uncertainties, risks and damage is one of the key short-term and long-term capabilities. There is a need for proactive competence at the local, regional, national and international levels, starting with the know-how of individual forest and land owners or land users. There will be new causes of damage in Finland, and there should be an up-to-date, reliable, overall view of their occurrence and abundance. Damage to forests and other plants in other countries also has an impact on Finland, and they must thus also be better included in anticipating changes in the operating environment. The resilience of forests in a changing climate is also emphasised in the EU Biodiversity Strategy.

Comprehensive research should cover the ecological, economic and social impacts of damage and disruption to renewable natural resources and their use. The aim is also to produce new or further developed methods and models for forecasts and monitoring.

As a result of climate change, most risks of destruction will become worse in the coming decades, and the trend of change will be extremely rapid. The increase in the global average temperature will have the strongest effect in the north, and winter temperatures will increase in particular. Direct and indirect climate risks to forests and agriculture include the effects of extreme weather phenomena (storms, snow and wind damage), forest fires, animal and plant damage, and increasing insect damage and fungal diseases. Adaptation, resilience and vulnerability are already included in research agendas, but more research is needed on linking them together, on concrete solutions and experiments.

Land use solutions are largely made by private forest owners and other landowners. It is important to identify the policy instruments and incentives that can steer landowners to take account of the climate impacts of agriculture and forestry. At the forest sector level, possible steering instruments may include carbon sink incentives for forest owners, subsidies for the use of wood for construction, taxes on cascade use of wood and voluntary carbon compensation markets. Research can produce information on the economic, environmental and income distribution impacts of these and other steering instruments. In addition to cost-effectiveness, administrative constraints, the framework conditions for international climate policy and the incentive nature and inclusiveness of the policy must be taken into account in the review. The activities of land and forest owners are also affected by other types of steering and changes in the operating environment, such as the increase in forest management risks caused by climate change. Consolidation of steering instruments and comprehensive assessment of impacts play a key role.

## WHAT KIND OF SOLUTIONS CAN RESEARCH AND INNOVATION PROVIDE?

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*In particular, researched information is needed on the types of uncertainties and opportunities associated with land use changes and the types of incentives that can be used to respond to the objectives of climate-sustainable land use and the use of natural resources.*

### **For example, the following research and innovation topics and related potential solutions have emerged in stakeholder work:**

- Research on the future of alternative forms of land use, weak signals and radical scenarios
- Use of soil data for different natural resource potentials (including new value creation, contract systems, payment systems) and their alignment with carbon neutrality targets
- Future business models and their impact chains in a carbon neutral circular bioeconomy
- Multidisciplinary, comprehensive and proactive assessment of the risks of future damage to agriculture and forestry
- Impacts on resilience and climate sustainability with the increasing risks of damage due to climate change
- Climate-resilient and proactive research data on deforestation and the climate impacts of soil areas (including landscaping)
- Proactive assessment of the strategic and operational risks to natural resources and their sustainable use
- Impacts of climate measures (e.g. fertilisation), incentives and recommendations on biodiversity and the load on water bodies in forest and agricultural environments
- Linking land use and game research for preventing damage from the perspective of overall sustainability
- Integrated and cumulative impacts of damage and disturbances at a national and regional level and investigated options for measures taking long-term impacts into account
- Impacts of forest and plant damage on carbon sinks and stocks and biodiversity in the short and long term
- Economic incentives for carbon sequestration and stocking for land and forest owners and other operators

# APPLYING FOR FUNDING AND FUNDING ASSESSMENT

## TIMETABLE

- Applications will be submitted by 5 November 2021 at 4.15 p.m.
- Applications will be evaluated during November and December 2021.
- Funding decisions will be made in December 2021 – January 2022.
- Projects may be launched on 1 January 2022 at the earliest.

## Submission of applications, parts of applications and applicants

### How and when will the application be submitted?

The application is submitted in the electronic application system of the Ministry of Agriculture and Forestry at <https://www.hankerahoitus.fi/MMM/hakemus/kirjaudu.php?ki=1> (Select the application card “Further application for the Catch the carbon research and innovation programme”) **by 5 November 2021 at 4.15 p.m.**

### The application will be submitted with the following PDF files attached:

- Project plan: up to 10 pages, project plan instructions as appendix 1
- CVs and publication lists as a single file: A) CVs of the main applicant and work package managers according to the model of the Finnish National Board on Research Integrity (TENK), up to 3 pages per person, and b) the main publications or outputs of the main applicant and work package managers that are related to the project applied for, up to 10 of the most significant for each
- If funding is applied for economic activities according to the general de minimis regulation, a report on the de minimis subsidies received by the company during the fiscal years 2019 – 2021.

The maximum size of each attachment is 5 MB.

In the case of a consortium application by several organisations, the application shall be submitted only by the main applicant. Applications can be submitted in Finnish, Swedish or English. The application does not need to be signed, but the applicant must be able to demonstrate the commitment of the place of performance where necessary. The application can be edited in the system until it is submitted.

### Who can submit an application?

Finnish organisations are eligible for application. The main applicant and the managers of the work packages must have a degree equivalent to that of an adjunct professor (professor, adjunct professor or doctor with the qualifications required for the adjunct professor’s degree). An exception to this is the manager of a possible innovation, co-creation or interactive work package, who does not require a doctoral degree.

The Ministry recommends that funding is applied for by consortia formed by two or more organisations, because meeting the objectives of the programme requires interdisciplinarity and cooperation between different operators. In consortium projects, funding is granted to the main applicant, who handles financial transactions with other organisations and is also responsible for reporting on the project to the Ministry. All organisations participating with the Ministry’s funding must be Finnish organisations. Companies may participate as part of consortia. The Ministry does not fund the product or service development or business development of individual companies. Instead, the results must be widely and openly accessible to different user groups.

The same person can only participate in one R&I programme application as the main applicant or the manager of the work package.

## Size and duration of projects and eligible costs

### How much funding can be applied for and for what period?

Some EUR 5 million of funding can be distributed in the application process that is now being launched. The objective is that the Ministry's funding per project will be in the order of EUR 1 million. The duration of the projects is approximately 2.5 years. The Ministry's funding may begin at the earliest on 1 January 2022. The project can be continued with self-financing or other funding.

Companies (economic activities) are financed in accordance with the European Union rules on de minimis aid (Commission Regulation 1407/2013). The total amount of de minimis aid, with the exception of some sectors, is EUR 200,000 per company during the current and the previous two fiscal years. De minimis aid granted by all public authorities is included. The application must be accompanied by a report on the de minimis aid received by the company in 2019 - 2021. In addition, before making the financing decision, the company must submit a notification to the Ministry on the de minimis aid received during the current and the previous two fiscal years.

### How is the project cost estimate and funding plan drafted?

If the organisation has a total cost model at its disposal, funding is applied for accordingly. Funding for research organisations and non-economic activities is generally granted up to 70% of the total eligible costs. The funding granted to companies may not exceed 50% of the total eligible costs or EUR 200,000 over a three-year period in accordance with de minimis regulation. If the total cost model is not used, funding is granted according to the additional cost model.

The annual cost estimate for the project, broken down by cost category, and the annual financial plan are presented in the electronic application form. The project plan should also indicate the use of resources by work package and a summary of the organisation-specific cost estimate and financial plan. It is recommended that in addition to the Ministry funding and the organisations' own funding, the project also includes other funding, such as business funding. Other external funding will not reduce the Ministry's funding.

Eligible costs include the salary of researchers (including project managers) and other personnel, other direct costs (travel, supplies and materials, outsourcing services, fees, etc.) and general costs. Device and equipment purchases are generally not considered acceptable costs. In certain well-justified situations, these can be approved. In this case, only the portion used by the project shall be reimbursed (this is calculated based on the depreciation and usage period of the device). The Ministry of Agriculture and Forestry does not finance the costs of establishing or acquiring research infrastructures.

The general terms and guidelines on research and development activities funded by the Ministry of Agriculture and Forestry apply to the application and use of funding.

### How will funding support those in the early stages of a researcher career?

In order to ensure the continuity and renewal of research in the subject area, the Ministry recommends that researchers in the early stages of their career work in the projects to be funded. The aim is that each project to be funded will employ at least one researcher in the early stages of their career for 1–2,5 years. A researcher in the early stages of their career refers to a doctoral candidate or post-doctoral researcher whose doctoral degree has been completed no more than 2–3 years before the time of closing the application process. As part of the programme activities, the Ministry organises events for researchers in the early stages of their scientific career for networking and, for instance, impact training.

## Open science, rights and responsibilities, publicity

### How does the programme promote good scientific practices and open science?

Applicants are required to commit to good scientific practices. The facilities completing the funded projects are responsible for obtaining any ethical committee opinions and other permits potentially required for carrying out the research. The projects must take open science into account and promote it as well as the policies on features such as the responsible assessment of researchers (the so-called DORA Declaration). The Ministry requires that the produced research publications be made openly available. The Ministry advises projects to promote re-use of data and open their data and methods according to the principles of open science and research. Projects must also promote open cooperation with different stakeholders.

### How are responsibilities and rights distributed in consortium projects?

If a consortium applies for funding, the parties to the consortium share the financial, technical, scientific risks of the project and its results. The parties must agree on the terms of the project before starting the project. In particular, they must agree on sharing the costs, risks and results of the project, the dissemination of the results and the use and sharing of intellectual property rights. Any intellectual property rights and related licences arising from the project shall be shared between the parties to the consortium in a manner that corresponds to their workload, contributions and benefits. Alternatively, research organisations will receive a remuneration corresponding to the market price for intellectual property rights arising from their activities and granted to participating companies or intellectual property rights to which the participating companies have access.

### What is the publicity and data protection of applications like?

The application and its appendices are public documents, with the exception of the project plan, which is generally confidential. For this reason, confidential information should not be reported for instance in a CV. Publicity is based on the Act on the Openness of Government Activities (621/1999). The Ministry of Agriculture and Forestry operates in compliance with data protection legislation. Privacy policy concerning the personal data file of the Ministry of Agriculture and Forestry's electronic application system: [https://www.hankerahoitus.fi/MMM/hakemus/Rekisteriseloste\\_MARA\\_paivitetty\\_12062018.pdf](https://www.hankerahoitus.fi/MMM/hakemus/Rekisteriseloste_MARA_paivitetty_12062018.pdf)

## Evaluation, decision-making and use of funding

### How will evaluation and decision-making take place?

Applications are peer reviewed in a national panel, which results in a numerical and written assessment for them and ranks them. The members of the panel have completed their dissertation and have extensive research and/or innovation expertise in the programme field. The Ministry of Agriculture and Forestry project group in the land use sector processes the panel proposal, and the Ministry decides on the projects to be funded on the basis of a peer review. The assessment criteria are set out in Appendix 2.

### What should be taken into account when using the funding granted?

The general terms and conditions for research and development activities funded by the Ministry of Agriculture and Forestry are complied with in the use, supervision and invoicing of the funding granted: <https://mmm.fi/documents/1410837/1516675/MMMn+rahoittaman+tutkimus-+ja+kehitt%C3%A4misto-iminnan+yleiset+ehdot+ja+ohjeet+2019-17.7.2019.pdf/>. The terms and instructions regulate features such as the duties of a responsible manager and the principles of open science and intellectual property rights.

More detailed instructions on monitoring and reporting on the implementation of the content of the projects are provided in the Ministry of Agriculture and Forestry's general guidelines on reporting on research and development activities.

## Further information:

### PROGRAMME CONTENT AND APPLICATION PROCESS:

Programme Manager Marjaana Suorsa, tel. +358 29 516 2228, marjaana.suorsa(at)gov.fi

### THE TECHNICAL FUNCTIONALITY OF THE ONLINE SEARCH SYSTEM:

Information Structures Ltd, info(at)mitietorakenteet.fi, tel. + 358 40 7458 106 (Maj-Lis Aaltonen).

## APPENDIX 1. PROJECT PLAN

No more than 10 pages, font in body text at least 11 pt Times New Roman or similar, margins of 2 cm or more.

### Project title and implementers

#### 1. RELEVANCE AND OBJECTIVES OF THE PROJECT

##### 1.1 The relevance of the project and joining the programme

- Please explain why the project is needed as part of the climate action package for the land use sector in accordance with the Government Programme. How does the project produce solutions for achieving the 2035 carbon neutrality target? How does the project correspond to the themes of the R&I programme?

##### 1.2 Project objectives

- What is the main objective of the project? What are the detailed objectives of the project?

#### 2. PROJECT IMPLEMENTATION

##### 2.1 Project work plan

- Work packages. What are the key research tasks? How has the potential innovation (e.g. living labs, pilots, experiments) been implemented? How have other interaction and/or co-development with key operators been implemented? What is the project schedule (including key milestones and outputs)?
- Organisation of the project. How is project management, decision-making, implementation monitoring and other administration organised?
- Risks. What are the critical points and alternative ways of implementing the project?

##### 2.2 Methods and materials used

- What are the key methods and materials? Why have they been selected?
- How are materials processed and stored? How have intellectual property rights been agreed on?
- Is the project implemented using research infrastructures on the national roadmap or other research infrastructures?

#### 3. PROJECT IMPLEMENTERS AND DIVISION OF LABOUR

- Who will implement the project? What are each of their roles in the project? What expertise do the implementers have and how does the competence correspond to the task in the project?
- How does the project promote the career and competence of early-career researchers?

#### 4. INNOVATION AND NOVELTY VALUE

- Innovation and novelty value of the project. What new and innovative features are produced by the project from a scientific and/or practical point of view? Do approaches and methods have novelty value? Please justify.
- How does cooperation between different operators promote the innovativeness of the project: a) In what way and why is there cooperation in the project? b) How does cooperation between different operators promote the achievement of the project's objectives and carbon neutrality targets?

#### 5. ETHICAL ISSUES AND OPEN SCIENCE

- What ethical questions are involved in the implementation of research and innovation, and how have they been taken into account?
- How does the project promote open science? How can publications and materials be made available and put to further use?



## **6. PROJECT RESULTS AND IMPACT**

- What are the expected results and solutions? How are they applicable in decision-making and practical operating environments?
- What is the anticipated or expected impact of the project/results, in particular in the land use sector and in the use of renewable natural resources? How does the project contribute to climate change mitigation and adaptation? What other impact does the project aim at?
- How has the impact of the project been examined from the perspective of overall sustainability (ecological, social, cultural, economic)? Does the review have cross-effects and, if so, how have they been verified, and what solutions does the project propose?
- What kind of impact and impact chains promote the achievement of the 2035 carbon neutrality target?
- How will the impact be achieved during and after the project (crystallise and supplement what is already described in section 2)?

## **7. COST ESTIMATE AND FINANCIAL PLAN**

- Summary of the cost estimate and financial plan by organisation. How are the costs divided by work package? Justification of costs?

## **REFERENCES**

# **APPENDIX 2. ASSESSMENT CRITERIA**

### **RELEVANCE FOR THE PROGRAMME (ASSESSMENT 1-6)**

- How does the project produce solutions for the implementation of the Government Programme and the climate action package in the land use sector?
- How does the project contribute to achieving the 2035 carbon neutrality target?
- How does the project implement the objectives of the R&I programme?

### **SCIENTIFIC QUALITY, NOVELTY VALUE AND INNOVATIVENESS (ASSESSMENT 1-6)**

- What is the scientific quality and significance of the project? How robust are the concepts and ideas?
- How are innovative results, solutions or breakthroughs achieved in the project?
- How does interdisciplinarity and cooperation between different operators improve the quality of the project?
- How does the project demonstrate that similar information/solution is not yet available?

### **FEASIBILITY OF THE PLAN (ASSESSMENT 1-6)**

- Are the objectives clear and will they be achieved by means of the work plan?
- Are the selected methods, materials and approaches convincing and effective? Are the plan and the cost estimate realistic? Does the project produce results cost-effectively? How does other external funding of the project support the implementation of the plan?
- How have potential risks been taken into account?
- How do research infrastructures support project implementation (if relevant)?
- Are project management, organisation and management appropriate?

### **ETHICAL ISSUES AND OPEN SCIENCE (NO NUMERICAL ASSESSMENT)**

- Are ethical questions related to the project? If so, have they been adequately taken into account? Does the plan support open science and other responsible scientific practices?

### **COMPETENCE OF APPLICANTS AND PARTNERS (ASSESSMENT 1-6)**

- Do applicants have the necessary capability and competence to implement, manage and interact with planned research and innovation? Are their competencies complementary? Do all participants have a clear role and the necessary resources to carry out their own task?
- How does the project promote the careers of early-career researchers?

## IMPACT AND APPLICABILITY (ASSESSMENT 1-6)

- How applicable are the project results and solutions in decision-making and practical operating environments?
- How significant is the potential impact of the project in climate change mitigation and adaptation? What other impact does the project achieve, for example, in reducing environmental impacts (e.g. load on water bodies, loss of biodiversity), the economy, employment, regional development, acceptability, resilience, policy coherence?
- How are the impact and effectiveness chains of the project that promote the achievement of the 2035 carbon neutrality target clearly and transparently indicated?
- How effective and appropriate are the planned measures to have an impact?
- Have key operators been involved in the preparation and implementation of the project, and how suitable are the forms of cooperation?

## GRADE DESCRIPTIONS:

**6 = superb:** the application has exceptionally high potential for promoting science and/or innovation activities, and no shortcomings

**5 = excellent:** the application meets all the requirements of the assessment criteria, and the potential shortcomings are minor

**4 = very good:** the application meets the criteria very well, and there are few shortcomings

**3 = good:** the application meets the criteria well, but contains some shortcomings

**2 = satisfactory:** application meets some of the criteria, but contains significant deficiencies

**1 = weak:** the application meets the criteria poorly or has serious deficiencies



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the  
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CLIMATE SOLUTIONS IN  
THE LAND USE SECTOR